CIRM Shared Research Laboratory Information Form – Part Two

Section A. Project Information

Project Title	A Stem Cell Core Facility for Studying Human Embryonic Stem Cell Differentiation

Limited to 300 Characters

Project Start Date	Aug 1, 2007	Construction Start Date	Jun 1, 2008	Occupancy Date	May 1, 2009

Total Part Two Funds Requested for Shared Laboratory Space	$1,978,535
Total Part Two Funds Requested for Stem Cell Techniques Course	
Total Capital Funds Requested	$ 985,385

Note: All green fields are calculated values. Do not enter a value in the field.

Please indicate whether you propose to apply for funding of a Stem Cell Techniques Course along with the Shared Laboratory Space, or just the Shared Laboratory Space.

(●) Shared Research Laboratory only ( ) Shared Research Laboratory and Stem Cell Techniques Course

NOTE: Please be aware that any information you provide in this form will be made publically available.

Section A. 1. Program Director

Name	Prefix	First	Middle	Last	Suffix
	Professor	Prudence		Talbot	

Email (office)	prudence.talbot@ucr.edu	This email address identifies you to CIRM. Please use this email address for all correspondence with CIRM.
Application Number	CL1-00508-1	This field should fill automatically, based on the email address. If not, enter the number you received via email from CIRM, in the form "XX9-99999-9", where "X" is a letter, and "9" is a digit.

Section A. 2. Facilities Contact

Name	Prefix	First	Middle	Last	Suffix
	Mr.	Timothy		Ralston	

Institution	University of California, Riverside	If your institution is not listed, please identify the name of the institution here.
Other Institution		
Position Title	Assistant Vice Chancellor	
Department	Capital and Physical Planning	
Address	3637 Canyon Crest Drive, #F101	

City	Riverside			CA	Zip Code 92507
Phone Number	(951) 827-2432	Ext		Fax Number	(951) 827-2402
Email (office)	timothy.ralston@ucr.edu	This email address identifies you to CIRM. Please use this email address for all correspondence with CIRM.			

(Revised 03/07/2007)

Section A. 3. Public Abstract

See Appendix A.

Section A. 4. Statement of Benefit to California

See Appendix A.

CIRM Shared Research Laboratory Information Form – Part Two

Section B. Laboratory Renovation Plan

Project Manager	George Macmullin		Construction Supervisor	George Macmullin
Title	Senior Engineer		Title	Senior Engineer
Company/Institution	UC Riverside		Company/Institution	UC Riverside

Describe plans for development/renovation of the shared laboratory space including fixed equipment costs. Include a description of the current space and how it will be renovated and reconfigured to form the laboratory. Include as attachments one 11x17 page of the current floor plan space and one 11x17 page of proposed floor plan of the renovated space. Describe all renovations that will be done. Describe how the project will be managed and tracked, as well as how change orders will be handled. For laboratories that are proposed to be located in leased space, provide information regarding the institution's long-term access to the leased space. Describe plans and schedule for all phases of development including design, construction, and installation of equipment leading to a functional laboratory. Give a proposed contingency plan in case of cost overruns. Any additional costs due to budget overruns will be the responsibility of the grant recipient. (narrative limited to 3 pages)

I. Overview.
UCR proposes to renovate approximately 1,279 ASF/1,680 GSF to house the Stem Cell Core Facility (SCCF), in space contiguous to the recently completed Institute of Integrative Genome Biology (IIGB). The proposed project area currently consists of administrative space and an adjacent covered unenclosed area. The proposed renovation will provide critical core facilities to support human stem cell research initiatives at UCR, as well as researchers at other institutions via joint projects.

II. Project Description.
The proposed SCCF will include partial interior demolition/reconstruction of space as well as reconfiguration of building systems within the project area to realize required research and research support facilities. The renovated areas will include the following:

a. Research Space:
-- Confocal Room: To accommodate up to three researchers using confocal microscope imaging techniques for analysis of cells. The room will provide a 30" Confocal Table, as well as computer workstations imaging processing.
-- Fluorescence Activated Cel Sorter (FACS) Room: To accommodate up to three researchers engaged in karyotyping.
-- Culture Prep Room: To accommodate research team preparation of mouse embryonic fibroblasts, media, reagents, immunohistochemical staining (in fume hood). RT-PCR gel work station for genotyping and RNA analysis. Will have the Millipore deionizer for water purification.
-- Equipment Room: To accommodate research team core support needs. This space will house a dishwasher and autoclave for sterilizing glassware, small clothes washer/dryer for lab coats, -80 and cryo storge for ES cell lines. CO2 tanks will be plumbed to the tissue culture room.
-- Culture Ante Room: To provide a negatively pressurized access space for Culture Room A and B, which are to be maintained at BioSafety Level 2 (BSL-2) levels.
-- Culture Room A: To accommodate a research team for mainenance of ES celllines for the Core. Workstations will be provided for individual users. The room will also be used to train others in ES cell culture. This room will house 2 laminar flow hoods (4'-0"), 2 stacked incubators, a moveable microscope bench, and a sink.
-- Culture Room B: Similar to Culture Room A, this space will enable a research team in the culturing of ES cells by individual users, especially when using viral vectors. This room will house 2 laminar flow hoods, 2 incubators, 2 small microscope tables, and a sink.
b. Research Support.
-- Facility Manager Office: To accommodate a full time Facility Management Officer who will oversee day-to-day operation of the SCCF.
-- Staff Research Associate Office: To accommodate a full time Research Associate/Technician, as well as additional data processing work stations and storage. This office will have adjacencies to the Facility Manager's office, as well as the research areas.
-- Entry: To provide controlled access to the SCCF, as well as a primary entry and physical identity for the Center.

III. Project Development Phases.
a. Preliminary Plans (2 months). This phase will begin upon selection of the design team, currently assumed for August 2007. This phase will encompass schematic design and design development components to confirm scope, cost and schedule assumptions. Costs associated with each milestone (e.g. 100% schematic, 100% design development) will be reviewed for

Section B -- 1. Laboratory Renovation Plan (continued)

alignment with available resources. If estimates indicate a misalignment with available resources, UCR will pursue a multiple pronged strategy of 1) exploring value engineering opportunities, 2) identifying bid additive/deductive alternates to maximize project value within the available resources, and 3) identifying a contingency funding strategy to provide adequate commitments to allow the project to be bid if items 1 and 2 are insufficient.
b. Working Drawings (4 months). This phase is assumed to begin in September 2007, upon completion of preliminary plans. This phase will include the detailed development of contract documents (drawings and specifications) which once completed will become the basis for bidding documents from contractors. At key milestones (e.g. 50%, 100% CD's) cost estimates will identify if anticipated project costs are in alignment with available resources. If estimates exceed available resources at these junctures, UCR will re-visit the multiple pronged strategies 1-3 noted above.
c. Bidding and Award (2 months). At the completion of the working drawings phase, a public bidding process, including solicitation, bidders review/job walk, and bid award, will proceed. If the bids from the successful bidder exceed the available project resources, UCR will evaluate re-bid strategies, as well as re-visit contingency funding strategies to allow the award of bid.
d. Construction (11 months). Upon award of the construction contract, work will begin on the renovation. Key components within this phase include the following:
-- Interior demolition of walls, ceiling, and flooring. Re-configuration of building systems: HVAC, electrical, teledata, and water. Abatement of hazardous materials (asbestos, transit, etc.) where applicable.
-- Construction of new walls, doors, and windows, ceilings and flooring. Installation of new building systems connections.
-- Installation of fixed equipment.
-- Pre-occupancy systems balancing and testing.
-- Change Orders. UCR's project manager will review all change orders with the Assistant Vice Chancellor for facilities, and will process as appropriate based on those reviews.
e. Occupancy (1 month). This phase will include delivery and placement of moveable equipment and furnishings.

Section B. 1. Schedule/Timeline and Drawdown of Funds Table

Provide a realistic schedule and drawdown of funds for completing each activity/milestone, as indicated below.

#	Activity/Milestone	Start Date	Completion or Milestone Date	Amount of CIRM funds to be drawn
1	Grant Award (estimate)		May 1, 2007	
2	Request for Planning Funds (10% of Construction Costs)		May 1, 2007	$ 98,539
3	Prepare Preliminary Plans		Jul 1, 2007	
4	Approval of PPs		Aug 1, 2007	
5	Prepare Working Drawings		Sep 1, 2007	
6	Approval of WDs		Dec 1, 2007	
7	Request Construction Contract funds (80% of Construction Costs)		Jan 1, 2008	$788,308
8	Advertise for Construction Contract		Jan 1, 2008	
9	Award Construction Contract		Mar 1, 2008	
10	Construction Activities	Mar 1, 2008	Feb 1, 2009	
11	Completion of Equipment Purchases		Nov 1, 2008	
12	Request Equipment Purchase funds		Jan 1, 2009	$993,150
13	Beneficial Occupancy		Jan 1, 2009	
14	Notice of Completion		Feb 1, 2009	
15	Request Construction Completion Amount (10% of Construction Funding)			$ 98,539

"Preliminary Plans" (PPs) represent approximately 35 percent of the design effort, or may be considered the product of completing the "Design Development" (DDs) phase of architectural work.

"Working Drawings" (WDs) represent drawings and specifications from which a contractor may determine the full extent of work contemplated in the project for purposes of submitting a bid; may be referred to as completion of "Construction Documents" (CDs) phase of architectural work.

Section B. 2. Budget

Provide a complete budget for the renovation that includes construction costs, design fees, administration of the project, other costs (i.e. installation of equipment) and a construction contingency (limited to 7-10% of the construction budget). Identify the amount of CIRM funds requested and the matching funds (construction requires 20% matching funds). Provide a complete budget for movable equipment (equipment requires 20% matching funds). (narrative limited to 3 pages)

(Note: An Excel spreadsheet can be attached as long as the total submission for this Section is limited to 3 pages)

PROJECT COST BASIS

Scope of Work
To successfully complete the necessary Tenant Improvements renovations to Batchelor Hall to accommodate the Stem Cell Core Facility, the project focuses on renovating approximately 1,279 assignable square feet (ASF), 1,680 gross square feet (GSF), of the northwest corner of the building.

The renovations comprise refurbishing existing administrative space in addition to a small infill project. The scope of work shall incorporate the following:

• Demolition of interior partitions, ceilings, finishes, functional equipment, and utility distribution in the areas identified by this project for renovation.
• Reconfigure and refit 1,279 ASF for new and improved laboratories, office and support functions to accommodate the needs of the stem cell research initiative. The renovations involve interior construction in the project area, including new electrical, HVAC, plumbing, partitions, floor coverings, ceilings, doors, casework, fume hoods, fixtures, and finishes.
• Estimated Construction Contract Cost: $835,071
• Estimated Soft Costs:
o Design Fees: $89,353
o Administration Costs: $19,202
o Construction Contingency: $41,757
• Movable Equipment: $993,150
• Total Project Cost: $1,978,533

MOVABLE EQUIPMENT OVER $5000
Equipment items listed are current models; if upgraded models and/or equivalent equipment at a better price should become available prior to purchase, then the requested items will be replaced with the more desirable item, with no increase in the total equipment budget.

Item	Quantity	Price ea.	Total___
Tissue Culture Incubators Thermo Forma Model 3110	6	$7500	$45,000
Biological Safety Cabinet, Class II Baker Model Sterilgard III 403a	5	$12,000	$60,000
Inverted Microscope Leica Model DM IL	3	$5000	$15,000
Inverted Microscope, Fluorescence Leica Model MZ FLIII	1	$20,000	$20,000
Dissecting Hood, Type I, 4 ft. Fisher Model 3980401	1	$5000	$5000
Stereo Zoom Dissecting Microscope Leica Mz9.5	1	$9000	$9000
Autoclave, Pelton-& Crane Magna-Clave	1	$15,000	$15,000
Freezer, -85 C, 25 cu ft So-Low Model 710L	1	$8500	$8500
Cryogenic Freezer Sanyo Model MDF-1155ATN	1	$15,000	$15,000
Endotoxin-free, Reagent Grade Water System Millipore Milli-Q Biocel	1	$7000	$7000

Section B. 2. Budget (continued)

X-Ray Irradiator Faxitron RX-650	1	$30,000	$30,000
Flow Cytometer w/ Cell Sorting Becton Dickinson FACS Aria	1	$400,000	$400,000
Confocal Microscope Nikon Live-Scan SFC	1	$200,000	$200,000
Karyotyping Workstation w/Software Cytogenetics	1	$50,000	$50,000
Videoconferencing Mobile Cart Axcess Video	1	$32,500	$32,500
RT-PCR System Bio-Rad	1	$25,000	$25,000
SUBTOTAL, >$5000 Equipment items			$937,000

MOVABLE EQUIPMENT LESS THAN $5000

Model designations are given as examples only, except where a specific model is mandatory (designated by asterisk). Other than mandatory items, general equipment will be purchased on the basis of function and price as available at time of purchase, without increasing the total movable equipment budget.

Item	Quantity	Price ea.	Total___
Clinical centrifuges	4	$750	$3000
Eppendorf centriguges	2	$2500	$5000
Refrigerator, Upright, Standard	1	$1000	$1000
Freezer, Upright, Standard (-20 C)	1	$1000	$1000
Refrigerators, Undercounter	2	$500	$1000
Air Cushion Microscope Tables	2	$2000	$4000
Stacking frames for incubators	3	$1000	$3000
Clothes washer/dryer combination, stacked	1	$1000	$1000
Office furniture for two offices			$7000
Chairs, tables, misc. furniture for laboratories			$10,000
Computers, Dell	4	$2000	$8000
Hot Bead Sterilizer	1	$1000	$1000
Dry Ice Box	1	$500	$500
Liquid Nitrogen Storage Cylinder	1	$1500	$2500
Waterbaths	3	$750	$2250
pH Meter	1	$750	$750
Horizontal Gel system (Owl)	1	$2000	$2000
Electrophoresis power supply	1	$750	$750
CCD Camera for microscopes	1	$1200	$1200
Analytical balance	1	$1200	$1200
SUBTOTAL OF ITEMS >$500 AND <$5000			$56,100
TOTAL MOVABLE EQUIPMENT			$993,150

Items under $500 (glassware, pipetters, dissecting tools, mixers, etc.) are considered “supplies” and will be purchased from the Part One supplies budget.

Section B. 3. Budget Summary Table

Complete the budget summary for the use of CIRM funds.
Note: All colored fields contain calculated data. Please do not enter anything in those fields.

Other Project Costs				
Budget Category		**Total Budget**	**CIRM Grant Funds**	**Institutional Match**
Construction Contract Costs		$ 835,071	$ 835,071	
Other Construction Costs (institutional)				
Subtotal Construction		$ 835,071	$ 835,071	
Design Fees		$ 89,353	$ 89,353	
Administrative Costs		$ 19,207	$ 19,207	
Construction Contingency		$ 41,754	$ 41,754	
Total Construction		$ 985,385	$ 985,385	
Movable Equipment		$ 993,150	$ 993,150	
Total Budget		$1,978,535	$1,978,535	
Gross Square Feet	1680	$ 586.54	$ 586.54	Const Costs/GSF
Assignable Square Feet	1279	$ 770.43	$ 770.43	Const Costs/ASF

Section B. 4. Institutional Commitment

Provide a detailed description of the amount and source of matching funding for each request that requires matching funds. The requirement of matching funds can be satisfied if the institution can document funds, excluding other grant funds, committed to similar projects (i.e., renovation of lab space and equipment purchase) after January 1, 2005. Detail the use of the space after the three year period is completed. (narrative limited to 2 pages)

CIRM Part Two, Section B.4: Institutional Commitment

The requested CIRM funds identified in Section B.3 equal the total project budget (e.g. capital costs and moveable equipment) associated with the SCCF. Campus "at-large" investments in stem cell research subsequent to January 1, 2005 are summarized below:

Since 2005, the UCR campus has allocated two faculty positions for stem cell research. One of these positions was filled by Dr. Noboru Sato, Assistant Professor of Biochemistry, in September of 2006, and the other position is to be filled in the Fall of 2007 (a final candidate has been chosen and an offer is expected to be made in April of 2007). We expect that the second candidate will be equipped at a level similar or slightly greater than Dr. Sato. Both of these positions were specifically recruited to increase our research activities with human stem cells, especially hESC.

Below are the expenditures that have been committed to Dr. Sato totaling $440,196. None of these commitments were from grant funds, and salaries are excluded. Note that the expenditures for this setup are almost identical in the type of equipment and consumables that are requested in the CIRM proposal, and therefore this represents a closely matched campus investment in stem cell science. Assuming a similar level of investment for the second faculty hire, the total institutional investment "at-large" would be approximately $880.392.

Purpose:	Source:	Amount committed:
Renovation of laboratory space for cell culture of human embryonic stem cells	Chancellor's funds	$28,000
Culture equipment for stem cells: tissue culture hoods, dissection hood, incubators, cryogenic freezer, refrig. centrifuge, inverted microscope, refrigerator, freezer	Chancellor's funds & Dean's funds	$87,100
Fluorescent inverted microscope w/ time lapse imaging function	Dean's funds	$73,000
Analytical equipment: PCR system, GelDoc analysis system, luminometer, centrifuges, bacterial incubators, spectrophotometer, pure water system, cold box, shaker bath, miscellaneous small analytical equip.	Dean's funds	$99,285
Animals and animal studies: Dissecting microscope, surgical equip., transgenic mice, cages, etc.	Dean's funds	$54,811
Data processing equipment Computers, printer	Dean's funds	$ 8,000
Cell culture consumables Stem cell lines, serum, culture medium, culture dishes, etc.	Dean's funds	$90,000

Section B. 4. Institutional Commitment (continued)

After the 3-year initial grant period, the SCCF will continue to be used in support of stem cell research by UCR research teams and affiliated research with other institutions. Similar use of the SCCF is envisioned as UCR continues to expand it's biomedical sciences research portfolio in support of the longer objective of establishing a School of Medicine.

Section C. Stem Cell Techniques Course (if applicable)

Based on the information provided in Part One of the application describing the course, include a justification of the additional space required and additional equipment requested, if any. Include additional square footage and provide as an attachment one 11x17 page of the proposed floor plan of the renovated space. (narrative limited to 1 page)

Limit narrative to visible field area.

Section C. 1. Schedule and Drawdown of Funds Table (if applicable)

Provide a realistic schedule and drawdown of funds for completing each activity/milestone, as indicated below.

#	Activity/Milestone	Start Date	Completion or Milestone Date	Amount of CIRM funds to be drawn
1	Grant Award (estimate)			
2	Request for Planning Funds (10% of Construction Costs)			$ 000
3	Prepare Preliminary Plans			
4	Approval of PPs			
5	Prepare Working Drawings			
6	Approval of WDs			
7	Request Construction Contract funds (80% of Construction Costs)			$ 000
8	Advertise for Construction Contract			
9	Award Construction Contract			
10	Construction Activities			
11	Completion of Additional Equipment Purchases			
12	Request Additional Equipment Purchase funds			
13	Beneficial Occupancy			
14	Notice of Completion			
15	Request Construction Completion Amount (10% of Construction Funding)			$ 000

"Preliminary Plans" (PPs) represent approximately 35 percent of the design effort, or may be considered the product of completing the "Design Development" (DDs) phase of architectural work.

"Working Drawings" (WDs) represent drawings and specifications from whicha contractor may determine the full extent of work contemplated in the project for purposes of submitting a bid; may be referred to as completion of "Construction Documents" (CDs) phase of architectural work.

"Additional Equipment" represents equipment to be used for the Stem Cell Techniques Course.

Section C. 2. Budget (if applicable)

Provide a complete budget for the additional renovation that includes construction costs, design fees, administration of the project, other costs (i.e. installation of equipment) and a construction contingency (limited to 7-10% of the construction budget). Identify the amount of CIRM funds requested and the matching funds (construction requires 20% matching funds). Provide a complete budget for additional movable equipment (equipment requires 20% matching funds). (narrative limited to 3 pages)

(Note: An Excel spreadsheet can be attached as long as the total submission for this Section is limited to 3 pages)

Section C. 3. Budget Summary Table (if applicable)

Complete the budget summary for the use of CIRM funds.
Note: All colored fields contain calculated data. Please do not enter anything in those fields.

Other Project Costs				
Budget Category		**Total Budget**	**CIRM Grant Funds**	**Institutional Match**
Construction Contract Costs				
Other Construction Costs (institutional)				
Subtotal Construction				
Design Fees				
Administrative Costs				
Construction Contingency				
Total Construction				
Additional Movable Equipment				
Total Budget				
Gross Square Feet		$ 0.00	$ 0.00	Const Costs/GSF
Assignable Square Feet		$ 0.00	$ 0.00	Const Costs/ASF

CIRM Shared Research Laboratory Information Form – Part Two

Section D. Signature Page

Complete, save, and print Part Two of the Shared Research Laboratory Grant Information.

Submit electronic application as an email attachment to laboratory@cirm.ca.gov no later than 5:00pm PST on March 16, 2007.

Mail* the original executed Part Two application and five (5) copies to:

Shared Research Laboratory Grant Application
California Institute for Regenerative Medicine
210 King Street
San Francisco, CA 94107

***Mailing must be postmarked no later than March 16, 2007.**
Applications will not be accepted after these deadlines.

Project Start Date	Aug 1, 2007	Construction Start Date	Jun 1, 2008	Occupancy Date	May 1, 2009

Total Part Two Funds Requested for Shared Laboratory Space	$1,978,535
Total Part Two Funds Requested for Stem Cell Techniques Course	
Total Capital Funds Requested	$ 985,385

Facilities Contact

Mr. Timothy Ralston
Assistant Vice Chancellor
Capital and Physical Planning
University of California, Riverside
3637 Canyon Crest Drive, #F101
Riverside, CA 92507
(951) 827-2432
timothy.ralston@ucr.edu

Authorized Organizational Official	Date
Print Name	Title
Program Director	Date
Print Name	Title

(Revised 03/07/2007)

CIRM Shared Research Laboratory Information Form – Part Two Supplement

Project Information

Application Number: CL1-00508-1

Program Director Name:

Historical Performance

Provide information on past performance for 3 projects.

	Project 1	Project 2	Project 3
Brief Project Title	Core Instrumentation Fac.	Bourns Hall Clean Room	Biological Sciences Bldg
Original Budget (Total project cost)	$3,617,000	$2,560,000	21,621,000
Final project cost	$4,069,000	$3,171,000	22,535,000
Scheduled Completion Date	Sep 30, 2002	Oct 31, 2004	Nov 30, 2005
Actual Notice of Completion Date	Apr 22, 2003	Aug 4, 2005	Jun 9, 2006
Gross Square Feet involved	12,247	3,000	55,071
Assignable Square Feet involved	9,113	1,980	31,666
Approximate number of change orders	5	8	10
Value of all change orders & claims	$- 116,235	$ 868,869	$1,890,000
Type of construction management	Design-Bid-Build	Design Build	Design-Bid-Build

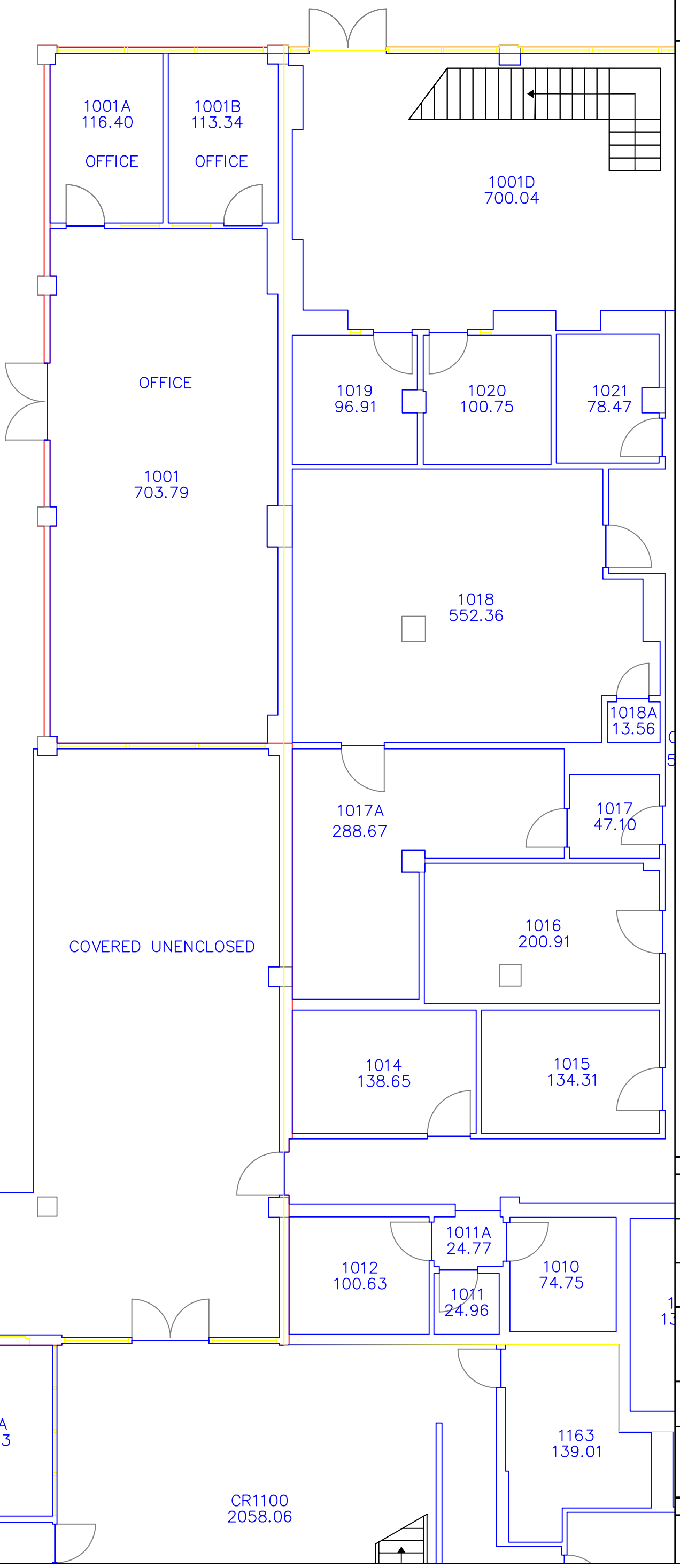
Laboratory Alteration Projects

Please enter the number of laboratory alteration projects completed by the applicant in the past 2 years (in the range of $1-5 million in project cost), and the approximate total dollar value that these projects represent.

Total Laboratory Alteration Projects: 1

Approximate Total Value: $2,560,000

Limit Budget Justification to visible field area.



UCR

UNIVERSITY OF CALIFORNIA RIVERSIDE

OFFICE OF:

CAPITAL AND PHYSICAL PLANNING
3637 CANYON CREST ROAD BANNOCKBURN F101
RIVERSIDE, CA 92507
PH.(951) 827-2431 FX.(951) 827-2402

Stem Cell Core Facility Proposal

Current Layout

CAAN #: P5501

DRAWN BY: ALS

PROJECT NO: N/A

DATE: 03/15/07

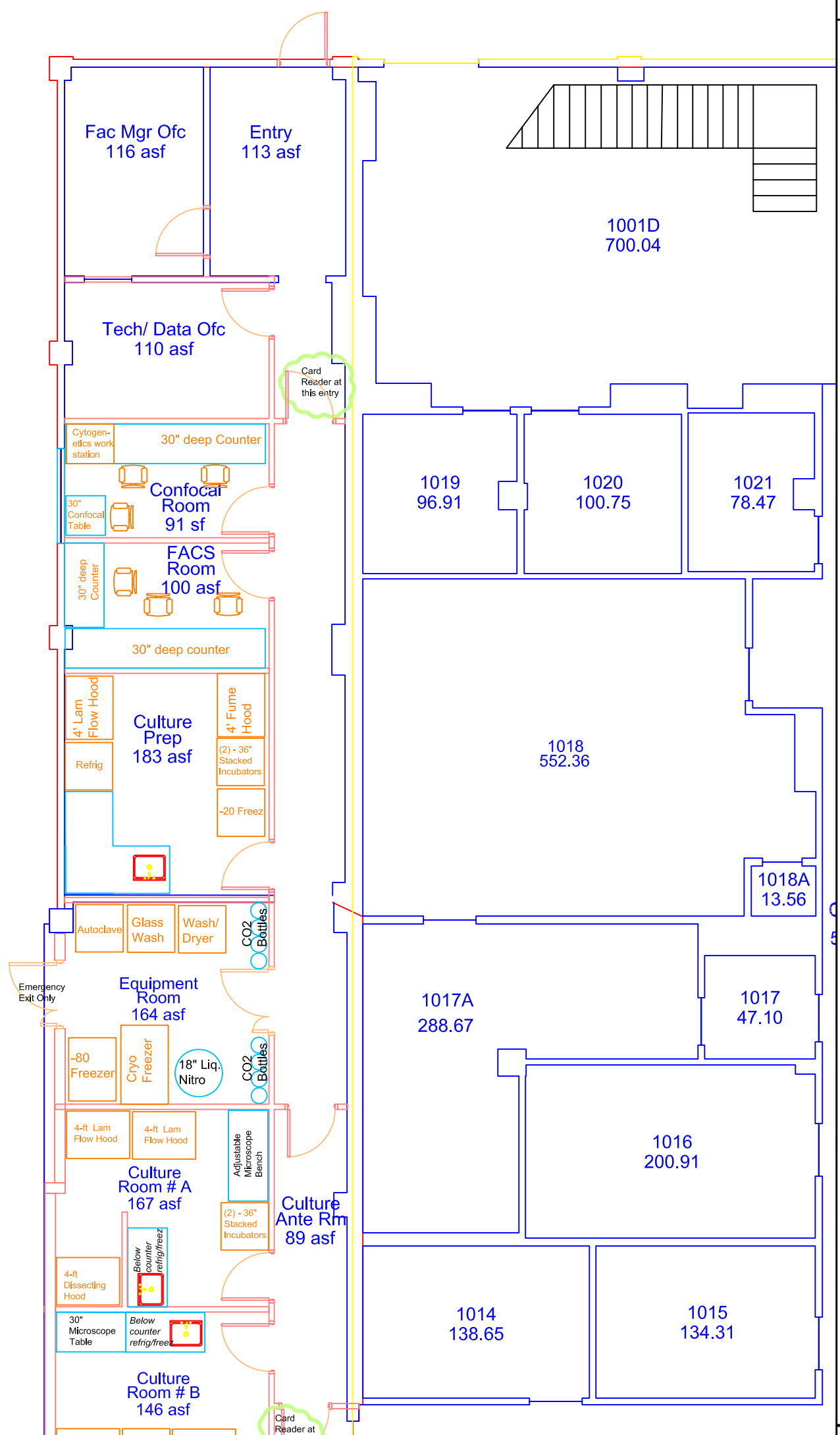
BUILDING NAME: BATCHELOR HALL

LEVEL: FIRST FLOOR

SHEET NO: 01

SCALE : 1/8" = 1' - 0"

DRAWING FILE: X-P5501-0A.DWG



UNIVERSITY OF CALIFORNIA RIVERSIDE

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3637 CANYON CREST ROAD BANNOCKBURN F101
RIVERSIDE, CA 92507
PH.(951) 827-2431 FX.(951) 827-2402

Stem Cell Core Facility Proposal

Proposed Layout

CAAN #: P5501

DRAWN BY: ALS

PROJECT NO: N/A

DATE: 03/15/07

BUILDING NAME: BATCHELOR HALL

LEVEL: FIRST FLOOR

SHEET NO: 01

SCALE : 1/8" = 1' - 0"

DRAWING FILE: X-P5501-0A.DWG

CIRM Part Two, Section B.4: Institutional Commitment

Since 2005, the UCR campus has allocated two faculty positions for stem cell research. One of these positions was filled by Dr. Noboru Sato, Assistant Professor of Biochemistry, in September of 2006, and the other position is to be filled in the Fall of 2007 (a final candidate has been chosen and an offer is expected to be made in April of 2007). We expect that the second candidate will be equipped at a level similar or slightly greater than Dr. Sato. Both of these positions were specifically recruited to increase our research activities with human stem cells, especially hESC.

Below are the expenditures that have been committed to Dr. Sato. None of these commitments were from grant funds, and salaries are excluded. Note that the expenditures for this setup are almost identical in the type of equipment and consumables that are requested in the CIRM proposal, and therefore this represents a closely matched campus investment in stem cell science.

Purpose:	Source:	Amount committed:
Renovation of laboratory space for culture of human embryonic stem cells	Chancellor's funds	$28,000
Culture equipment for stem cells: tissue culture hoods, dissection hood, incubators, cryogenic freezer, refrigerated centrifuge, inverted microscope, refrigerator, freezer	Chancellor's funds & Dean's funds	$87,100
Fluorescent inverted microscope w/ time lapse imaging function	Dean's funds	$73,000
Analytical equipment: PCR system, GelDoc analysis system, luminometer, centrifuges, bacterial incubators, spectrophotometer, pure water system, cold box, shaker bath, miscellaneous small analytical equip.	Dean's funds	$99,285
Animals and animal studies: Dissecting microscope, surgical equipment, transgenic mice, cages, etc.	Dean's funds	$54,811
Data processing equipment Computers, printer	Dean's funds	$ 8,000
Cell culture consumables Stem cell lines, serum, culture medium, culture dishes, etc.	Dean's funds	$90,000

TOTAL for 1 faculty member **$440,196**

The campus will set up one additional faculty member in 2007-08 with at least this level of expenditures. The finalist for this position has been identified and is returning for a second visit shortly so we are very confident that she will be hired by July 1st 2007. Therefore the minimum expenditures for the setup of 2 embryonic stem cell faculty in areas directly related to CIRM goals will be ……**TOTAL $880,392**

IN-KIND MATCH

In addition to the cash expenditures described above, several campus in-kind matching activities will be contributed. Drs. David Carter and Thomas Girke, who are the directors of core facilities in the Institute for Integrative Genome Biology (IIGB) and the Center for Plant Cell Biology (CEPCEB), have agreed to serve *gratis* on the Stem Cell Core Facility oversight committee, to consult with facility staff and users in the use of flow cytometry, confocal microscopy, and bioinformatics. Technical staff members Barbara Walter (flow cytometry and cell sorting) and Linda Ritter (cytogenetics) will consult and the hourly fees for their participation will be paid by the Vice Chancellor for Research.

MOVABLE EQUIPMENT BUDGET JUSTIFICATION

MOVABLE EQUIPMENT OVER $5000
Equipment items listed are current models; if upgraded models and/or equivalent equipment at a better price should become available prior to purchase, then the requested items will be replaced with the more desirable item, with no increase in the total equipment budget.

Item	Quantity	Price ea.	Total
Biological Safety Cabinet, Class II	**5**	**$12,000**	**$60,000**

Baker Model Sterilgard III 403a

Five laminar flow hoods are requested: two for each culture room (A and B), and one for the culture prep room. This will provide for a total of 5 work stations. Each work station will consist of a hood, incubator space and access to an inverted microscope. The two stations located in Culture Room A will be used by the Core staff to maintain the hESC cell lines and train others in hESC culture techniques. The stations in Culture Room B will also be used for hESC, primarily by individual users. Other human cell types required by the users in their work related to hESC may also be used in Culture Room B (e.g., human adult stem cells) as well as viral vectors into hESC. The work station in the preparation room will be used for mouse feeder layers and other non-human cells used to support the hESC work.

Tissue Culture Incubators	**6**	**$7500**	**$45,000**

Thermo Forma Model 3110

Three vertically stacked double incubators (6 total) are requested. One stacked incubator pair will go into each of the culture rooms (A, B and the Prep Room), allowing for 5 workstations (see explanation above).

X-Ray Irradiator	**1**	**$30,000**	**$30,000**

Faxitron RX-650

Irradiation of feeder layers is required for most hESC work. The X-ray unit is more space- and cost-efficient than a Cs137 irradiator.

Inverted Microscope	**3**	**$5000**	**$15,000**

Leica Model DM IL

Three standard inverted microscopes are requested: one for use in Culture Room A, one for use in Culture Room B, and one for the Culture Prep room (see explanation above).

Inverted Microscope, Fluorescence	**1**	**$20,000**	**$20,000**

Leica Model MZ FLIII

One fluorescence inverted microscope is requested for use with fluorescent-labeled hESC (GFP, etc.) in Culture Room A.

Dissecting Hood, Type I, 4 ft.	**1**	**$5000**	**$5000**

Fisher Model 3980401

This hood is for use in Culture Room A in order to dissect differentiated ES cells away from undifferentiated cells.

Stereo Zoom Dissecting Microscope **1** **$9000** **$9000**
Leica Mz9.5
This microscope is for use with the dissecting hood noted above.

Autoclave **1** **$15,000** **$15,000**
Pelton-& Crane Magna-Clave
A self-contained steam autoclave is required for sterilization of instruments, glassware, etc., and for destruction/decontamination of cultures and tissue samples.

Freezer, -85 C, 25 cu ft **1** **$8500** **$8500**
So-Low Model 710L
This freezer is requested for storage of frozen materials such as enzymes, tissue specimens, and short term storage of cells and cell lines (e.g., mouse embryonic fibroblasts), etc.

Cryogenic Freezer **1** **$15,000** **$15,000**
Sanyo Model MDF-1155ATN
A cryopreservation freezer with liquid nitrogen backup is requested for storage of critical archival samples, including all hESC cell lines.

Endotoxin-free, Reagent Grade Water System **1** **$7000** **$7000**
Millipore Milli-Q Biocel
A self-contained reagent grade water system is needed to insure quality of water used for solutions and media. It will go in the Culture Prep Room.

Flow Cytometer w/ Cell Sorting **1** **$400,000** **$400,000**
Becton Dickinson FACS Aria
Most of the researchers using the facility will be assessing the differentiation potential of cells. A flow cytometer is essential for separation of significant numbers of cells to be used for differentiation in culture or for transplantation. Dr. David Carter, the Director of the Imaging Core in the Institute of Integrated Genome Biology (IIGB) and Center for Plant Cell Biology (CEPCEB), and who is on our oversight committee, will oversee the operation of this instrument. The instrument will be operated by Barbara Walter, an experienced flow cytometrist who operates the same model of instrument for the Core Instrumentation Facility in the IIGB (located in the same building as the SCCF). *Her time on this instrument will be paid by the Vice Chancellor for Research on an hourly basis as part of the institutional match.*

Confocal Microscope **1** **$200,000** **$200,000**
Nikon Live-Scan SFC
Inspection of fluorescently labeled cells in situ is a critical need for the SCCF. This confocal microscope allows use for live cells in culture as well as specimens prepared using more standard immunocytochemical techniques. Dr. David Carter, the Director of

the Imaging Core in the Institute of Integrated Genome Biology (IIGB) and Center for Plant Cell Biology (CEPCEB), and who is on our oversight committee, will oversee the operation of this instrument. *He will train faculty and students (many of whom already use confocal microscopy) in the operation of this instrument as an in-kind contribution to the institutional match.*

Karyotyping Workstation w/Software **1** **$50,000** **$50,000**
Cytogenetics
A karyotyping system is required to monitor the chromosome stability of hESC lines. We will use the high-resolution fluorescence microscope in the adjoining IIGB Core to scan slides, and this software to monitor multicolor FISH as well as G-banding. This part of the facility will be overseen by Dr. Andrew Grosovsky, who has more than 20 years of experience in studying chromosome stability in human cells and is on our oversight committee. The system will be operated by Linda Ritter, who is an experienced cytogeneticist. *Her time will be paid on an hourly basis by the Vice Chancellor for Research as part of the institutional match.*

Videoconferencing Mobile Cart **1** **$32,500** **$32,500**
Axcess Video
This system will allow videoconferencing with collaborators (see for example the Memorandum of Understanding between UCR and UCI), teaching of courses to audiences outside the core facility, and teaching uses inside the facility (e.g. demonstrations using a video camera attached to microscopes).

RT-PCR System **1** **$25,000** **$25,000**
Bio-Rad
Quantifying gene expression in hESC lines via real-time PCR (RT-PCR) is central to the research projects of the investigators who will use this facility. The instrument will also be used by the Core staff for genotyping of cell lines to insure their identity and to monitor (and avoid) any genetic drift.

SUBTOTAL, >$5000 Equipment items **$937,000**

MOVABLE EQUIPMENT LESS THAN $5000
Model designations are given as examples only, except where a specific model is mandatory (designated by asterisk). Other than mandatory items, general equipment will be purchased on the basis of function and price as available at time of purchase, without increasing the total movable equipment budget.

Item	Quantity	Price ea.	Total
Clinical centrifuges	4	$750	$3000
Eppendorf centrifuges	2	$2500	$5000
Refrigerator, Upright, Standard	1	$1000	$1000
Freezer, Upright, Standard (-20 C)	1	$1000	$1000
Refrigerators, Undercounter	2	$500	$1000

Air Cushion Microscope Tables	2	$2000	$4000
Stacking frames for incubators	3	$1000	$3000
Clothes washer/dryer combination, stacked	1	$1000	$1000
Office furniture for two offices			$7000
Chairs, tables, misc. furniture for laboratories			$10,000
Computers, Dell	4	$2000	$8000
Hot Bead Sterilizer	1	$1000	$1000
Dry Ice Box	1	$500	$500
Liquid Nitrogen Storage Cylinder	1	$1500	$2500
Waterbaths	3	$750	$2250
pH Meter	1	$750	$750
Horizontal Gel system (Owl)	1	$2000	$2000
Electrophoresis power supply	1	$750	$750
CCD Camera for microscopes	1	$1200	$1200
Analytical balance	1	$1200	$1200
SUBTOTAL OF ITEMS >$500 AND <$5000			**$56,100**
TOTAL MOVABLE EQUIPMENT			**$993,150**

Items under $500 (glassware, pipettors, dissecting tools, mixers, etc.) are considered "supplies" and will be purchased from the Part One supplies budget.

CALIFORNIA INSTITUTE FOR REGENERATIVE MEDICINE

Appendix A

Application: CL1-00508-1

Title: A Stem Cell Core Facility for Studying Human Embryonic Stem Cell Differentiation

Public Abstract:

This application proposes to develop a Stem Cell Core Facility of ~1700 square feet to support the use of human embryonic stem cells (hESC) for a growing consortium of stem cell scientists at the home institution as well as neighboring institutions. The facility will be built and managed so as to allow use of non-NIH-approved hESC cell lines as well as research funded by non-federal agencies including the California Institute for Regenerative Medicine (CIRM). The Facility will be centrally located adjacent to other existing, successful core facilities and within short walking distance of all the users at the home institution. The Facility will be managed by an Oversight Committee consisting of faculty experienced in hESC and associated technologies, as well as those with experience in managing shared core facilities. The Committee will have close contact with an established Biotechnology Impacts Center to address any ethical issues that may arise.

The users at the home institution consist of an energetic, interdisciplinary group of both young and established investigators who have made a substantial commitment to stem cell biology. Within the past several years, they have held workshops on embryonic stem cells with neighboring institutions, taught two graduate level courses in stem cell biology, including one in bioethics, established a Stem Cell Center, and applied for and received CIRM funding. They have recently hired an experienced hESC investigator and are currently recruiting others, demonstrating the home institution's commitment to the field of hESC. The group currently consists of 30 investigators from three different colleges within the home institution who have common interests in molecular mechanisms of pluripotency and differentiation of hESC.

Several investigators have joint projects, including collaborations with investigators at neighboring institutions who will also be using the facility. The proposed Stem Cell Core Facility will allow this dynamic group of accomplished investigators to bring the promise of stem cell biology to an expanding, culturally diverse region of California.

The research programs that would use the facility concentrate on various aspects of the molecular mechanisms underpinning the pluripotency of hESC, as well as their ability to differentiate into different types of tissues. The results generated by these programs will contribute to the development of tools, diagnostics, and therapies by laying the foundation for understanding hESC and identifying new compounds and methodologies that will allow researchers to maintain hESC and prepare them for use in therapies. This basic understanding of the molecular networks governing hESC biology is essential before any safe and effective treatment can be considered for use in humans.

Statement of Benefit to California:

When Californians resoundingly passed Prop 71, they demonstrated the importance of stem cell research to all the citizens of our state. However, the human embryonic stem cell (hESC) lines that are currently sanctioned by the federal government are limited by many factors including genetic stability, contamination, poor growth characteristics, and lack of genetic and disease diversity. Working with non-federally approved hESC lines, including new more robust lines that will be developed in the future, will be necessary for any eventual therapeutic use of stem cells. Also critical to that success will be a thorough understanding of the molecular mechanisms that govern the pluripotency and differentiation of hESC, as well as attracting new scientific expertise to the field of stem cell biology.

This proposal meets these challenges and benefits all Californians by establishing a Stem Cell Core Facility (SCCF) that will greatly expand both the scientific as well as the geographic base of stem cell research. The SCCF will allow research on non-federally funded hESC lines and service a group of highly accomplished investigators at the host and neighboring institutions in the most ethnically and culturally diverse and fastest growing region of California. The investigators are all at the top of their respective fields, have a range of hESC expertise and are committed to applying their experience to some of the most critical issues facing the hESC field today. The group is highly interdisciplinary and has an established history of productive interactions and collaborations. They have created a new Stem Cell Center which is aggressively fostering stem cell research and have secured extramural funding for that research. All proposed users have existing projects that directly impact our understanding of the basic biology of hESC and will generate data that will be essential to the successful development of stem cell-based therapies.